

of original specimens, or in furnishing me with information upon the distribution or location of species. \* \* \*

[The length to which the list extends of British and Foreign Naturalists to whom Prof. Agassiz expresses his obligations, precludes our giving it insertion.—EDIT.]

Neuchâtel, July 1841.

XXXV.—*Descriptions of new species of Coleopterous Insects belonging to the Genus Apocyrthus, collected by Hugh Cuming, Esq., in the Philippine Islands.* By G. R. WATERHOUSE, Esq., Assistant Secretary and Curator to the Zoological Society.

Order COLEOPTERA.

Sect. CURCULIONIDES.

Div. PACHYRHYNCHIDES, Schö.

Genus APOCYRTUS, Erichson.

*Apocyrthus Schanherri.*

Ap. niger; capite notâ inter oculos et utrinque infra oculos; thorace notâ transversâ anticâ, maculisque duabus lateralibus et superioribus, necon elytris maculis viginti-duabus, splendidè cupreis, vel aureo-cupreis; rostro rugoso-punctato ad basin transversim impresso, capite et rostro canaliculo longitudinali impressis; thorace crebrè punctato; elytris globoso-ovatis ferè duplò thorace latoribus, distinctè punctatis, punctis in striis irregularibus dispositis. Long. corp.  $8\frac{1}{2}$  lin.; lat.  $3\frac{3}{5}$  lin.

This is the largest species of the genus I am acquainted with; its elytra are less globose, and the thorax is larger in proportion to the elytra than in *Ap. inflatus*: the beautiful metallic spots with which it is adorned vary somewhat in hue, being in some specimens of a reddish golden tint, and in others of a copper colour. The rostrum is thickly punctured, and the punctures are more or less confluent; a transverse indented line separates the rostrum from the head, and a longitudinal impression runs from this line towards the fore-part of the rostrum, becoming gradually broader in front and terminating in a line with the insertion of the antennæ. The head is rather sparingly punctured; between the eyes is a small metallic spot (in some specimens wanting), and beneath the eye is an oblique mark formed of brilliant scales. The thorax is very nearly equal in length and breadth, subglobose, and truncated before and behind; on the anterior margin is a transverse mark, about midway between the anterior and posterior margins; and towards the side of the thorax is a round spot, and just above the insertion of the femur is a broad oblong mark formed of brilliant scales; the surface of the thorax is rather coarsely punctured, and the punctures are many of them confluent. The elytra are more than one-third broader than the thorax—sometimes nearly twice as broad—about one-third broader than long, ovate and very convex; they are punctured, and the punctures

are small, and for the most part arranged in striae: the spots, formed of scales, are either nine or ten in number on each elytron; viz. two at the base, three arranged in a transverse line near the middle, a sixth larger oblong spot on the outer margin rather behind the middle of the elytra, and three on the apical half, one of which is very near the apex; the second, above this and near the suture, is large, and has a tendency to divide into two spots, and in some cases joins the apical spot; the third is in a line with the last, and near the outer margin; the tenth spot, when present, is small, and placed between the two last-mentioned spots. On the meso- and metasternum are four spots, one near the insertion of each of the femora.

*Apocyrthus Hopei.*

Ap. niger; capite anteriore et rostro rugosis, lineâ squamosâ longitudinali; thorace subgloboso, distinctè punctato, punctis plerùmque confluentibus, marginibus anticis et lateralibus, sic et maculis duabus suprà squamis ob-  
sitis; elytris ovatis, thorace conspicuè latioribus, irregulariter punctato-  
striatis, striis ordine gemino dispositis; ad basin et ad apicem lineis dua-  
bus longitudinalibus, fasciâ in medio, margine laterali, maculisque duabus  
subapicalibus è squamis effectis; maculis notisque omnibus pallidè cupreis.  
Long. corp. 6 $\frac{1}{4}$  lin.; lat. 2 $\frac{1}{2}$  lin.

This species is about equal in size to the *Pachyrhynchus moniliferus*, and approaches that insect in form; but the rostrum is rather narrower and longer, and the elytra are also more elongated. The markings are of a very pale copper colour, with a slight metallic hue; they consist of a longitudinal mark between the eyes which extends on to the rostrum, terminating in a line with the point of insertion of the antennæ; a line borders the anterior margin of the thorax, and there is a patch of scales on the sides of the thorax just above the base of the femora; besides these two marks, are two spots on the upper surface: a moderately broad line runs parallel with and close to the outer margin of each elytron, but is interrupted towards and at the apical portion; at the base is a longitudinal mark situated at a short distance from the suture; this mark is joined to the lateral band by a transverse line at the base of the elytra; it terminates considerably short of a central transverse fascia: on the apical portion of the elytra are two other longitudinal marks, the foremost portion of which is thickened, and lastly there are two largish transverse subapical spots. Besides the scales which form these spots and markings, are numerous minute scattered hairs on the hinder part of the elytra, as well as on the body beneath and on the legs.

*Apocyrthus cæruleonotatus.*

Ap. niger; capite maculâ inter oculos et utrinque infra oculos, thorace ma-  
culis duabus et margine antico lateribusque, necnon elytris maculis sex-  
decim vel octodecim, cæruleis; rostro rugoso punctato ad basin transver-  
sim depresso, capite et rostro canaliculo longitudinali impressis; thorace  
globoso crebrè at leviter punctato; elytris oblongo-ovatis thorace parùm  
latioribus distinctè punctatis, punctis in striis irregularibus dispositis.  
Long. corp. 6 $\frac{1}{4}$  lin.; lat. 2 $\frac{1}{4}$  lin.

This species is larger than the *Pachyrhynchus moniliferus*; the thorax is broader in proportion to the elytra, and the elytra are less

globose. The spots on the thorax and elytra are of moderate size, and most of them round.

*Apocyrthus ruficollis.*

Ap. piceus; thorace pedibus rufescentibus; corpore subtus, genibus, tarsisque nigrescentibus; thorace cum elytris quoad latitudinem ferè coæquali. Thorax punctatus, disco impunctato, ad latera subtuberculata. Elytra subseriatim punctulata. Long. corp.  $6\frac{1}{2}$  lin.; lat.  $2\frac{1}{2}$  lin.

This species nearly resembles the *Ap. profanus* (Eschsch.) in form, but is proportionately rather shorter and broader; it is much less coarsely sculptured than that species, and more than twice the size.

*Apocyrthus quadrulifer.*

Ap. niger; thorace punctato; clytris parcè punctatis; capitum notâ suboculari, et rostri notâ basali, necnon thoracis margine lineisque duabus longitudinalibus, pallide caeruleo-viridibus; sic et elytrorum lineas, areas quatuordecim, plerasque quadratas, circumdantibus; areis duabus suturalibus. Long. corp. 6 lin.; lat. 3 lin.

This species nearly resembles in size and form the *Pachyrhynchus moniliferus*, but the thorax is proportionately larger, and the elytra rather narrower. The rostrum is thickly but finely punctured, and has a transverse groove behind, and a large oblong shallow impression in front. The thorax is distinctly punctured, is margined by a greenish blue line, and has two longitudinal lines above, towards the sides. The elytra are divided by longitudinal and transverse lines into numerous areas which are mostly of a quadrate form, or nearly so: at the base of the elytra five of these areas (which are rather longer than broad) form a transverse series—the largest of these is the central one: in the middle of the elytra there is another transverse series of four areas; here, therefore, there is a line on the suture; behind these again are five more areas; the central one is long, and extends to the apex of the elytra, and those adjoining on either side are nearly of a triangular form. The elytra are distinctly punctured, but the punctures are scattered, and, excepting near the suture, do not form longitudinal striae. The thorax is rather sparingly punctured; the head is smooth behind; but between the eyes are some indistinct confluent punctures; in front of the eyes is a transverse impression, and on the basal half of the rostrum is a longitudinal depression, which is dilated in front. The upper surface is rather finely punctured.

*Apocyrthus subquadrulifer.*

Ap. niger, thorace suprà punctulato; clytris distinctè punctatis; capitum notâ suboculari et rostri notâ basali, necnon thoracis margine lineisque duabus metallicè viridibus, sic et elytrorum lineis areas undecim plerasque oblongas circumdantibus; areis tribus suturalibus. Long. corp. 6 lin.; lat.  $2\frac{1}{2}$  lin.

This species is about equal in size to the *Pachyrhynchus moniliferus*; the elytra are rather more elongated, and the thorax a trifle less swollen in the middle: it is rather less than the *Apocyrthus quadrulifer*; the rostrum is narrower and more contracted at the base; the thorax and elytra are also proportionately narrower. Like the insect last mentioned, the present species has the elytra divided into rectan-

gular areas by lines formed of green or blue-green scales; but here the number and disposition of these areas are different, there being three central or sutural areas, whilst in *P. quadrulifer* there are but two: the total number of areas is eleven; in *P. quadrulifer* there are fourteen. Between the eyes is a longitudinal groove, and immediately in front of them is a transverse furrow, through which the longitudinal groove is continued, and terminates about the middle of the rostrum. The thorax is margined with green in front and at the sides, besides which there are two longitudinal green lines, one on each of the disc. The space between the two last-mentioned lines presents a few scattered small punctures, but towards and at the sides the thorax is smooth; the length and width of the thorax are very nearly equal; in front and behind it is truncated, and in the middle it is slightly swollen. The elytra are rather less than twice as broad as the thorax, convex, ovate, attenuated behind; they are punctured, and the punctures are small, rather scattered, and have a tendency to arrange themselves into striae.

*Apocyrtus metallicus.*

Ap. *aeneus*, *nitidus*, thorace maculis duabus supernè, duabus anticè et utrinque unâ; elytris distinctè punctato-striatis maculis sexdecim; his maculis è squamis viridi-aureis. Long. corp.  $4\frac{1}{2}$  lin.; lat.  $1\frac{1}{4}$  lin.

The *Ap. metallicus* and *Ap. lœvicollis* are the only two species of the present genus I am acquainted with in which the ground-colour of the body and legs is metallic: the colour is the same in both species, being sometimes of a bronze hue, and sometimes having a slight copper-like tint. *Ap. metallicus* is readily distinguished from *Ap. lœvicollis* by the elytra being adorned with smallish round spots, which are of a golden or golden green colour, the last-named species having narrow bands instead of spots. The rostrum is rather finely punctured in front, has a longitudinal groove, and is separated from the head (which is almost destitute of punctures) by a very deep transverse channel. The thorax is small compared with many of the genus, subglobose, truncated before and behind, glossy, and very distinctly punctured; on the anterior margin is a small spot on each side immediately behind the eye; on the lateral margin is another and larger spot, and there are two small spots on the upper surface about midway between the anterior and posterior margins, and rather widely separated from each other. The elytra are of an ovate form, and distinctly punctato-striated: on each elytron are eight round or nearly round spots, viz. two at the base, two in a transverse line in the middle, three, also in a transverse line, behind the middle, and one near the apex: on the abdomen beneath are four spots. All these spots are formed by golden green scales.

*Apocyrtus lœvicollis.*

Ap. *aeneus*, *nitidus*; rostro punctato, sulcâ longitudinali, et ad basin profundè transversim impresso; thorace subgloboso, indistinctissimè punctulato; marginibus squamis caruleo-viridibus ornato; elytris rotundato-ovatis, punctato-striatis, fasciis duabus et versùs apicem punctis duabus

lineisque arcuatis duabus apicalibus cæruleo-viridibus. Long. corp. 3½—4½ lin.; lat. 1½—1¾ lin.

This pretty little species varies considerably in size, as will be seen by the above dimensions. The rostrum is separated from the head by a very deep transverse impression, and has a distinct longitudinally impressed line; in front it is convex, and rather thickly though finely punctured. The head is very sparingly punctured; the thorax is subglobose and rather small; its surface is glossy and is very delicately punctured; the margins are adorned with blue-green scales. The elytra are convex, of an ovate form, and nearly twice as broad as the thorax, distinctly punctato-striated: at the base of each elytron is a transverse narrow blue-green band, on the middle is a second band, and behind is a longitudinal mark running parallel with and at a short distance from the suture; joining this mark with the central transverse fascia is a curved line which runs nearly parallel with the outer margin of the elytron; in the area enclosed by the markings last described is a small round spot. The glossiness and smoothness of the thorax will serve to distinguish the present species from all others of the genus here described, excepting the *Ap. metallicus*, which greatly resembles the *A. lœvicolis*, not only in this character, but in size, form, and also in the sculpturing of the elytra: this however appears to be less strongly marked in the present than in the preceding species.

*Apocyrtus elegans.*

Ap. niger; rostro suprà concavo; capite punctato, anticè lineâ transversâ impresso, et inter oculos striâ longitudinali; thorace subgloboso, tuberculis crebris parùm elevatis obsito, suprà maculis duabus, anticè et ad latera, squamis aureo-viridibus ornato; elytris subseriatim punctatis, maculis ornatis, his maculis, lateribusque elytrorum, aureo-viridibus. Long. corp. 5½ lin.; lat. 2½ lin.

Rather less than the *Pachyrhynchus moniliferus*; the thorax smaller, and the elytra proportionately more elongated. In size and disposition of the markings the present species resembles the *Ap. gibbirostris*; but in that species the thorax and elytra are very nearly equal in width, whilst in the *A. elegans* the thorax is considerably narrower than the elytra: here the upper surface is covered with glossy tubercles, and there is a somewhat indistinct dorsal channel; in *Ap. gibbirostris* the thorax is coarsely punctured above.

The rostrum is concave above, rather finely punctured, and separated from the head by a transverse groove: the head presents largish scattered punctures between the eyes, and has a longitudinally impressed line in the same part; beneath the eye is a small brilliant spot. The thorax is subcylindrical, but dilated in the middle; the anterior part is narrowly margined with brilliant scales, and there is a broad patch of these scales on each side, besides two smallish round spots on the upper surface: these are widely separated and situated not far from the hinder margin. The elytra present a nearly ovate outline, but are somewhat pointed behind; they are distinctly punctured, and the punctures have a tendency to form themselves into lines. At the base of each elytron are two roundish spots of mode-

rate size, one of which is near the suture, and the other joins the broad marginal band ; in the middle are three spots arranged in a transverse line, but the two outermost of these are confluent and also join the marginal band ; behind the middle are three other spots, the outermost of which also joins the band just mentioned as well as an apical spot. All these spots are of moderate size, nearly round, and formed of brilliant golden green scales, and the broadish marginal band is formed of similar scales.

*Apocyrthus bifasciatus.*

Ap. niger ; pedibus piceo-rubris, genibus tarsisque nigrescentibus ; capite inter oculos depresso et canaliculo longitudinali super rostrum ducto ; rostro parcè punctato ; thorace globoso, rugoso-punctato ; elytris oblongo-ovatis, thorace paulò latioribus, distinctè punctatis : capite maculâ viridi inter oculos et utrinque infra oculos ornato ; thorace margine antico lateribusque viridibus ; elytris distinctè punctatis, fasciis duabus latis transversalibus ornatis ; his maculis fasciisque è squamis splendidè aureo-viridibus effectis. Long. corp. 6 lin. ; lat.  $2\frac{1}{4}$  lin.

The two broad transverse fasciae on the elytra of this species (one of which is at the base and the other behind the middle) are almost joined by a series of brilliant scales on the sides of the wing-cases : there is a brilliant spot on each side of the abdomen between the middle and posterior pairs of legs.

*Apocyrthus geniculatus.*

Ap. niger ; femoribus, tibiisque rufis, genibus nigris ; capite punctato, sulco longitudinali impresso ; thorace subgloboso, anticè posticè truncato, suprà punctis distinctis confluentibus impresso ; elytris thorace distinctè latioribus, ovatis, posticè paulò acuminatis, punctatis, punctis confluentibus atque subseriatis, posticè aliquantò repente contractis, ad suturam elevatis et tuberculo instructis, ad latera propè basin depressis. Thorax ad latera squamis cæruleis adpersus. Elytra fasciâ non valde distinctâ subapicali, lateralibusque cæruleis. Long. corp.  $6\frac{1}{4}$ —5 lin. ; lat.  $2\frac{3}{4}$ —2 lin.

This species much resembles the *Ap. bifasciatus*, but the thorax is narrower and more thickly and distinctly punctured, and the elytra are also more thickly punctured. As in *Ap. bifasciatus*, there is sometimes a basal and subapical fascia on the elytra, but these in most specimens can scarcely be traced, and are never distinct ; they are formed by scattered pale blue scales. In one sex there is a tubercle on the hinder part of the elytra situated on the suture, and behind this tubercle is a brush of minute hairs. At the base of the elytra is a depression on each side, and a small hump near the humeral angle. The punctures of the elytra in some specimens are confluent and give a rough appearance to the surface ; in others they are arranged into moderately regular striæ. The legs are almost of an orange colour ; the coxae, knees, tip of the tibiae, and the tarsi are black.

Of the *Ap. geniculatus* very many specimens were brought home by Mr. Cuming : the *A. bifasciatus* appears to be scarce or very local, the collection containing but one specimen.

*Apocyrthus picipennis.*

Ap. ater ; femoribus tibiisque rufis, genibus nigris ; capite parcè punctato, longitudinaliter impresso ; rostro ad basin transversim impresso, rugoso,

et squamis viridibus ornato ; thorace subrotundato, anticè posticèque truncato, rugoso, margine antico, lateribus, fasciâque transversâ interruptâ, squamis viridibus ornatis ; elytris subrotundatis, rufo-piceis, irregulariter punctato-striatis, fasciis tribus, è squamis cœruleo-viridibus effectis, et ad apicem squamis quasi pulverulentis. Long. corp. 6—5 lin. ; lat.  $2\frac{3}{4}$ — $2\frac{1}{4}$  lin.

This may be distinguished from many of the genus by the more globose form of the elytra which are much broader than the thorax, and thus makes an approach to the *Ap. inflatus* ; in that species however the disproportion between the width of the thorax and clytra is considerably greater. The head is distinctly punctured, the rostrum is thickly punctured and somewhat rugose ; an impressed line is observable between the eyes, and this extends on to the rostrum, which is separated from the head by a broadish transverse groove. Between the eyes is a patch of blue or green scales, and these often extend on to the base of the rostrum. The thorax is subglobose and rugose above ; on the anterior margin is a narrow line of scales, and on each side is a broader band, besides which there is a transverse fascia rather behind the middle, which is often interrupted in the centre. The elytra are one-third broader than the thorax or rather more ; they are distinctly punctured, and the punctures are arranged in somewhat irregular striae ; at the base is a transverse fascia, a second is situated in the middle, and a third between this and the apex ; these fasciae are rather narrow, and are sometimes of an ultramarine blue colour, and sometimes greenish ; the apex of the elytra is powdered as it were with scales of a similar colour. The head, thorax, body beneath, knees and tarsi, and antennæ are black ; the elytra and coxæ are pitchy red, sometimes pitchy ; the legs are red.

*Apocyrtus gibbirostris.*

*Ap. niger*, nitidus ; rostro (in fœm. ?) suprà gibbere instructo ; thorace ferè rotundato, punctato, punctis confluentibus, margine antico, lateribus, fasciâque interruptâ, squamis viridibus ornatis ; elytris latitudine cum thorace ferè coæqualibus, subseriatim punctatis, fasciis tribus plus minusve interruptis, lateralibus, maculisque apicalibus è squamis aureo-viridibus effectis. Long. corp.  $5\frac{3}{4}$  lin. ; lat.  $2\frac{1}{2}$  lin.

Rostrum with two large deep foveæ at the base, the remaining portion elevated and forming a large hump, the surface of which is nearly flat, thickly punctured, and of a triangular form, the base of the triangle being in front. Head rather sparingly punctured between the eyes and with a longitudinally impressed line. Thorax broad and nearly globose, coarsely punctured, the punctures confluent ; a narrow margin of scales in front, a broader mark at the sides, and a transverse band rather behind the middle : this band is interrupted in the centre, and does not extend to the lateral margins. Elytra subovate, broadest rather behind the middle, and suddenly acuminate at the apex ; the width but little exceeding that of the thorax : the brilliant golden green scales with which the elytra are adorned are so arranged as to form a broadish and somewhat irregular band at the base, and this joins a narrower band on the lateral margins ; in the middle is a transverse fascia which is sometimes broken up into spots, and behind the middle is a second similar fascia ; towards

the sides of the elytra is a longitudinal mark which is sometimes interrupted, and in other cases joins the two fasciæ just mentioned : besides these markings there is another line on each elytron which runs parallel with and near the suture ; this is joined at the apex of the elytra by the marginal band. The punctures of the wing-cases, which are not strongly marked, are arranged in striae, but these are not always very regular. I have before me a specimen agreeing with the above description, but which differs in being smaller and narrower, and in wanting the hump on the rostrum. I presume the specimen described is a female and the humpless one is the male. Other specimens agree with the last, excepting in having two spots on the upper part of the thorax instead of the fascia : they have a broad sub-apical fascia on the elytra and a spot at the apex, but no longitudinal mark near the suture.

*Apocyrthus subfasciatus.*

Ap. ater, nitidus ; capite notâ inter oculos ; thorace globoso anticè posticè que truncato, supra crebrè tuberculato, tuberculis nitidis et parùm elevatis, marginibus anticis et lateralibus sic et maculis tribus, viridibus ; elytris latitudine cum thorace ferè coequalibus, subseriatim punctatis, fasciis tribus plerùmque interruptis, lateralibus, maculisque apicalibus aureo-viridibus. Long. corp.  $5\frac{1}{4}$  lin.—4 lin. ; lat.  $2\frac{1}{6}$ — $1\frac{1}{2}$  lin.

In size and form, as well as in the markings, this species so closely resembles the *Ap. gibbirostris*, that I feel considerable hesitation in giving it a name, though it differs considerably in the sculpture of the thorax. In the *gibbirostris* the thorax is punctured, whilst the *subfasciatus* has the upper surface of the thorax covered with glossy and but little elevated tubercles.

The head is punctured between the eyes, where there is moreover a longitudinally impressed line which is continued on to the rostrum and terminates nearly in a line with the base of the antennæ ; the upper surface of the rostrum is thickly punctured ; a patch of golden green scales is situated partly on the head and partly on the rostrum. The thorax is nearly equal in width to the elytra, has the anterior and lateral margins adorned with green scales, besides which there are three spots on the upper surface, an oblong spot in the middle extending to the hinder margin, and one on each side about midway between the anterior and posterior margins. The elytra are rather short, nearly as broad at the base as in the middle ; they are distinctly punctured, and the punctures have a tendency to form longitudinal lines : at the base of each elytron is a transverse band, which is often interrupted and broken into spots ; in the middle of the elytra is a transverse series of spots, arranged one on each side near the suture, and a second near the lateral margin which is larger ; near the apex of each elytron is a transverse mark which joins a longitudinal line situated near the suture and a band on the outer margin of the elytra, and thus encloses a triangular area ; these marks however are sometimes broken up into spots, and the band on the outer margin of the elytra is often interrupted in parts.

This appears to be a very common species in the Philippine Islands.

*Apocyrthus cuneiformis.*

Ap. niger vel piceo-niger; pedibus rubris, genibus tarsisque nigris; corpore cuneiformi, postice latissimo; rostro crebre punctato, punctis confluentibus, sulco lato longitudinali et ad basin lineâ transversâ, impresso; capite lineâ longitudinali impresso; thorace mediocriter convexo in medio vix dilatato, supra rugoso vel subtuberculato; elytris supra crebre punctatis, punctis confluentibus, subdepressis, ad basin quoad latitudinem vix cum thorace coequalibus; squamis minutis cæruleis corpore superiore adsperso. Long. corp.  $5\frac{3}{4}$ — $4\frac{1}{2}$  lin.; lat.  $2\frac{3}{4}$ — $1\frac{3}{4}$  lin.

The very small blue scales on the head, thorax and elytra of this insect are very indistinct, requiring a lens to perceive them; they are moreover so scattered as scarcely to affect the general ground-colouring.

*Apocyrthus subcuneiformis.*

Ap. rufo-piceus; pedibus rufis, antennis, genibus, tarsisque nigris; corpore subdepresso, subcuneiformi; thorace rugoso; elytris supra depresso crebre subseriatim punctatis, tuberculo suturali versus apicem instructis, pilis vestito. Long. corp. 6 lin.—5 lin.; lat. 3— $2\frac{1}{2}$  lin.

This species very closely resembles the *A. cuneiformis*, but differs in having the thorax proportionately narrower, the elytra broader, more decidedly depressed above, and the broadest part is more removed from the apex or nearer the middle than in that insect; the colour is always pitchy red, whereas in *A. cuneiformis* it is usually black and rarely pitchy; the sculpturing is rather less strong. Both species were abundant in specimens in Mr. Cuming's collection, but they do not appear to have been collected in the same locality, some of Mr. Cuming's bottles containing one species and some the other. In form the present and preceding species differ considerably from others of the genus: the thorax is less globose, being but little dilated in the middle; the elytra are of the same width as the thorax at the base; thence they gradually become wider—in *cuneiformis* the upper surface is subdepressed, and the widest portion is near the apex; in *subcuneiformis* the upper surface of the elytra is nearly flat, but at the sides and apical fourth they suddenly drop as it were, and thus, viewing the insect from above, the rounded angle formed by the sudden descending of the parts mentioned constitutes the outline of the visible portion; at the suture and towards the apex of the elytra is a blunt tubercle, which is furnished with a brush of small hairs.

*Apocyrthus rufescens.*

Ap. corpore rufescente; pedibus rufis; antennis, genibus, tarsisque nigris thorace subcylindrico, in medio vix dilatato, tuberculis minutis crebre obsoito; elytris convexis, in medio dilatatis, ad apicem acutis, crebre tuberculatis, ad latera tuberculis majoribus in seriebus tribus vel quatuor obsoitis. Long. corp.  $5\frac{3}{4}$ — $4\frac{3}{4}$  lin.; lat.  $2\frac{1}{2}$ — $2\frac{1}{2}$  lin.

Closely allied to *A. cuneiformis* and *A. subcuneiformis*, but distinguished by the elytra being narrower, not depressed above; the apical portion is more produced, and does not form a right angle with the dorsal surface, but descends gradually: the thorax is thickly studded with minute tubercles, and so are the elytra; on the sides of the

elytra there are three or four longitudinal rows of tubercles of a larger size : on the suture and at the commencement of the apical third of the elytra is a tubercle which is provided with a tuft of small hairs : the body beneath is pitchy red ; the upper parts are of a dull red colour. In some specimens small scattered green scales are observable on the thorax and elytra, especially on the sides of the former, and at the base and on the sides of the latter.

[To be continued.]

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*XXXVI.—The Physical Agents of Temperature, Humidity, Light, and Soil, considered as developing Climate, and in connexion with Geographic Botany.* By RICHARD BRINSLEY HINDS, Esq., Surgeon R.N.

[Continued from p. 189.]

HITHERTO our attention has been chiefly directed to the temperature of the air, under the influence of various circumstances which regulate the amount. The direct heating power of the sun's rays, or radiation, has not been noticed, though their action on the vegetable kingdom is often very important. As vegetation under usual circumstances is fully exposed to the effects of the seasons, the conditions to which it is liable, from the presence or absence of the sun, become a subject of important inquiry. Two different results follow radiation : the first is an increase in the sensible heat during the period of the sun's rays above the horizon ; the second is a decrease of the same, due to a transfer of heat during the night from the earth, by what is called terrestrial radiation. By this the temperature around vegetation is capable of being very considerably reduced.

I. Daily observation shows us the very great difference between the impression made on our feelings by the temperature of the shade and the sun's rays. The fact ascertained, it was next necessary to discover whether it obeyed any regularity in its relation to the temperature conferred on the air by the sun, and whether the progression of the seasons, time of the day, or the latitude, influenced this relation. The laws of its influence over the surface of the globe are now generally determined, and they become another confirmation of that omnipotent foresight by which the conditions of our nature were so distributed, that where at first view the absence of an agent would convey a momentary impression of error or confusion, a little inspection will display a new agent compensating for the absence of the other.

Its relations in different latitudes are not perhaps what would